User Guide

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Product notice

This guide describes features that are common to most models. Some features may not be available on your computer.

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For any further information or for requesting a full refund of the computer, please contact your local point of sale (the seller).

Safety warning notice

⚠ **WARNING!** To reduce the possibility of heat-related injuries or of overheating the computer, do not place the computer directly on your lap or obstruct the computer air vents. Use the computer only on a hard, flat surface. Do not allow another hard surface, such as an adjoining optional printer, or a soft surface, such as pillows or rugs or clothing, to block airflow. Also, do not allow the AC adapter to come into contact with the skin or a soft surface, such as pillows or rugs or clothing, during operation. The computer and the AC adapter comply with the user-accessible surface temperature limits defined by the International Standard for Safety of Information Technology Equipment (IEC 60950).

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1 Starting right

IMPORTANT: The Ubuntu operating system installed on this computer does not support some of the features that are available on other operating systems. For example, Ubuntu may not support discrete graphics or mSATA drives.

This computer is a powerful tool designed to enhance your work and entertainment. To get the most out of your computer, read this chapter to learn about best practices after setup, fun things to do with your computer, and where to go to get more HP resources.

Best practices

To protect your smart investment, after you set up and register the computer, we recommend the following steps:

- If you haven't already done so, connect to a wired or wireless network. See details in Connecting to a network on page 4.
- Become familiar with the computer hardware and software. Go to Finding your hardware and software information on page 3 and Enjoying entertainment features on page 9 for information.
- Update or purchase antivirus software. Learn more at Using antivirus software on page 38.
- Back up your hard drive by creating recovery discs or a recovery flash drive. See Backing up, restoring, and recovering on page 44.

Fun things to do

- You know you can watch a YouTube video on the computer. But did you know that you can also connect your computer to a TV and watch the video on TV? For more information, see Connecting an HDMI TV or monitor on page 12.
- You know you can listen to music on the computer. But did you know that you can also stream live radio to the computer and listen to music or talk radio from all over the world? See Using audio on page 9.
- You know you can create a powerful presentation with your computer. But did you know you can also connect to a projector to share your ideas with a group? See Connecting a VGA monitor or projector on page 10.

More HP resources

You have already used *Setup Instructions* to turn on the computer and locate this guide. For product details, how-to information, and more, use this table.

Resource	Contents
Setup Instructions	• Overview of computer setup and features.
Ubuntu Desktop Guide To access this guide, press the f1 key.	• A broad range of how-to information and troubleshooting tips.
Safety & Comfort Guide To access this guide, double-click the **HP Documents** icon located on the desktop, or go to http://www.hp.com/ergo.	• Proper workstation setup. • Guidelines for posture and work habits that increase your comfort and decrease your risk of injury. • Electrical and mechanical safety information.
Worldwide support To get support in your language, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.	• Chat online with an HP technician. • Email support. • Find worldwide support telephone numbers. • Locate HP service center locations.
Regulatory, Safety and Environmental Notices To access this guide, double-click the **HP Documents** icon located on the desktop.	• Important regulatory notices, including proper battery disposal information.
*Limited Warranty** To access the warranty, double-click the **HP Documents** icon located on the desktop, or go to http://www.hp.com/go/orderdocuments.	• Specific warranty information about this computer.

*You can find the expressly provided HP Limited Warranty applicable to your product located with the user guides on your computer and/or on the CD/DVD provided in the box. In some countries/regions, HP may provide a printed HP Limited Warranty in the box. For countries/regions where the warranty is not provided in printed format, you may request a printed copy from http://www.hp.com/go/orderdocuments or write to:

- **North America**: Hewlett-Packard, MS POD, 11311 Chinden Blvd., Boise, ID 83714, USA
- **Europe, Middle East, Africa**: Hewlett-Packard, POD, Via G. Di Vittorio, 9, 20063, Cernusco s/Naviglio (MI), Italy
- **Asia Pacific**: Hewlett-Packard, POD, P.O. Box 200, Alexandra Post Office, Singapore 911507

When you request a printed copy of your warranty, please include your product part number, warranty period (found on your service label), name, and postal address.

IMPORTANT: Do NOT return your HP product to the addresses above. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.

Finding your hardware and software information

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings**.
2. Select the **Details** icon from the **System** section.

The Overview displays all the devices installed in your computer, including optical drives, solid-state drives (SSDs), or a secondary hard drive.

To find out what software is included on your computer:

1. Click the **Ubuntu Software Center** button located on the left side of the desktop in the **Launcher**, and then click **Installed** at the top of window to display software categories.
2. Click a software category to display the installed software for that category.

2 Connecting to a network

Your computer can travel with you wherever you go. But even at home, you can explore the globe and access information from millions of websites using your computer and a wired or wireless network connection. This chapter will help you get connected to that world.

Connecting to a wireless network

Wireless technology transfers data across radio waves instead of wires. Your computer may be equipped with one or more of the following wireless devices:

- Wireless local area network (WLAN) device—Connects the computer to wireless local area networks (commonly referred to as Wi-Fi networks, wireless LANs, or WLANs) in corporate offices, your home, and public places such as airports, restaurants, coffee shops, hotels, and universities. In a WLAN, the mobile wireless device in your computer communicates with a wireless router or a wireless access point.
- Bluetooth® device—Creates a personal area network (PAN) to connect to other Bluetooth-enabled devices, such as computers, phones, printers, headsets, speakers, and cameras. In a PAN, each device communicates directly with other devices, and devices must be relatively close together—typically within 10 meters (approximately 33 feet) of each other.

Identifying wireless and network status icons

Icon	Name	Description
	Wireless (connected)	Indicates that one or more wireless devices are on.
	Network Connection (connected)	Indicates that the wired network is connected and active. If both wired and wireless connections are active, the operating system uses the wired connection because it is faster.
	Network Connection (disconnected)	Indicates that wired and wireless networks are not connected.

Using the wireless controls

Your computer may be equipped with one or more of the following wireless devices. You can control the wireless devices in your computer using these features:

- Wireless button, wireless switch, or wireless key (referred to in this chapter as the wireless button)
- Operating system controls

Using the wireless button

Depending on your model, the computer may have a wireless button, one or more wireless devices, and one or more wireless lights. All of the wireless devices on your computer are enabled at the factory, so the wireless light is on (white) when you turn on the computer.

The wireless light indicates the overall power state of your wireless devices, not the status of individual devices. If the wireless light is white, at least one wireless device is on. If the wireless light is amber, all wireless devices are off.

Because the wireless devices are enabled at the factory, you can use the wireless button to turn on or turn off the wireless devices simultaneously. Individual wireless devices can be controlled by clicking on the **Network menu** icon at the far right of the top panel, and then clicking **Edit Connections**.

Using operating system controls

To enable or disable a wireless or wired network device:

1. Click the **Network menu** icon at the far right of the top panel.
2. To enable or disable one of the following devices, select or clear one of the following options:
   - **Enable Networking** (all network devices)
   - **Enable Wireless**

Using a WLAN

With a WLAN device, you can access a wireless local area network (WLAN), which is composed of other computers and accessories that are linked by a wireless router or a wireless access point.

NOTE: When creating a wireless connection or allowing access to users in a network, you are prompted for the root password.

NOTE: The terms *wireless router* and *wireless access point* are often used interchangeably.

- A large-scale WLAN, such as a corporate or public WLAN, typically uses wireless access points that can accommodate a large number of computers and accessories and can separate critical network functions.
- A home or small office WLAN typically uses a wireless router, which allows several wireless and wired computers to share an Internet connection, a printer, and files without requiring additional pieces of hardware or software.

To use the WLAN device in your computer, you must connect to a WLAN infrastructure (provided through a service provider or a public or corporate network).

Using an Internet service provider

When you are setting up Internet access in your home, you must establish an account with an Internet service provider (ISP). To purchase Internet service and a modem, contact a local ISP. The ISP will help set up the modem, install a network cable to connect your wireless computer to the modem, and test the Internet service.

NOTE: Your ISP will give you a user ID and a password to use for Internet access. Record this information and store it in a safe place.

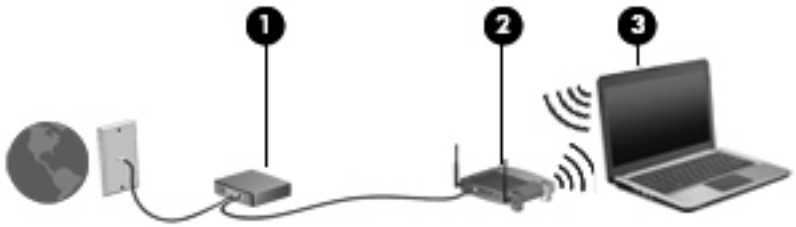
Setting up a WLAN

To set up a WLAN and connect to the Internet, you need the following equipment:

- A broadband modem (either DSL or cable) **(1)** and high-speed Internet service purchased from an Internet service provider
- A wireless router **(2)** (purchased separately)
- A wireless computer **(3)**

NOTE: Some modems have a built-in wireless router. Check with your ISP to determine what type of modem you have.

The illustration below shows an example of a wireless network installation that is connected to the Internet.



As your network grows, additional wireless and wired computers can be connected to the network to access the Internet.

For help in setting up your WLAN, see the information provided by your router manufacturer or your ISP.

Configuring a wireless router

For help in setting up a WLAN, see the information provided by your router manufacturer or your ISP.

NOTE: It is recommended that you initially connect your new wireless computer to the router by using the network cable provided with the router. When the computer successfully connects to the Internet, disconnect the cable, and access the Internet through your wireless network.

Protecting your WLAN

When you set up a WLAN or access an existing WLAN, always enable security features to protect your network from unauthorized access. WLANs in public areas (hotspots) like coffee shops and airports may not provide any security. If you are concerned about the security of your computer in a hotspot, limit your network activities to email that is not confidential and to basic Internet surfing.

Wireless radio signals travel outside the network, so other WLAN devices can pick up unprotected signals. Take the following precautions to protect your WLAN:

- Use a firewall.

  A firewall checks both data and requests for data that are sent to your network, and discards any suspicious items. Firewalls are available in both software and hardware. Some networks use a combination of both types. Ubuntu does not include firewall software, but you can download Gufw, a free firewall utility that Ubuntu provides. For information on how to download and install Gufw, refer to Using firewall software on page 38.

- Use wireless encryption.

  Wireless encryption uses security settings to encrypt and decrypt data that is transmitted over the network.

Connecting to a WLAN

To connect to the WLAN, follow these steps:

1. Be sure that the WLAN device is on. If the device is on, the wireless light is white. If the wireless light is amber, press the wireless button.
2. Click the **Network menu** icon at the far right of the top panel.

   Available wireless networks are listed under **Wireless Networks**.
3. Click the desired wireless network.

   If the network is a security-enabled WLAN, you are prompted to enter a network security code. Type the code, and then click **OK** to complete the connection.

NOTE: To connect to a network that is not automatically detected, click the **Network menu** icon and select **Connect to Hidden Wireless Network**. Enter the ESSID information, and set encryption parameters.

NOTE: If no WLANs are listed, and your network is not hidden, you are out of range of a wireless router or access point.

If you do not see the network you want to connect to, click the **Network menu** icon at the far right of the top panel, and click **Edit Connections**.

NOTE: The functional range (how far your wireless signals travel) depends on WLAN implementation, router manufacturer, and interference from other electronic devices or structural barriers such as walls and floors.

Using Bluetooth wireless devices

Your computer may have a Bluetooth device depending on the model. A Bluetooth device provides short-range wireless communications that replace the physical cable connections that traditionally link electronic devices such as the following:

- Computers (desktop, notebook, PDA)
- Phones (cellular, cordless, smart phone)
- Imaging devices (printer, camera)
- Audio devices (headset, speakers)
- Mouse

Bluetooth devices provide peer-to-peer capability that allows you to set up a personal area network (PAN) of Bluetooth devices. For information about configuring and using Bluetooth devices, see the Bluetooth software Help.

Connecting to a wired network

Connecting to a LAN requires an 8-pin, RJ-45 network cable.

WARNING! To reduce the risk of electric shock, fire, or damage to the equipment, do not plug a modem cable or telephone cable into an RJ-45 (network) jack.

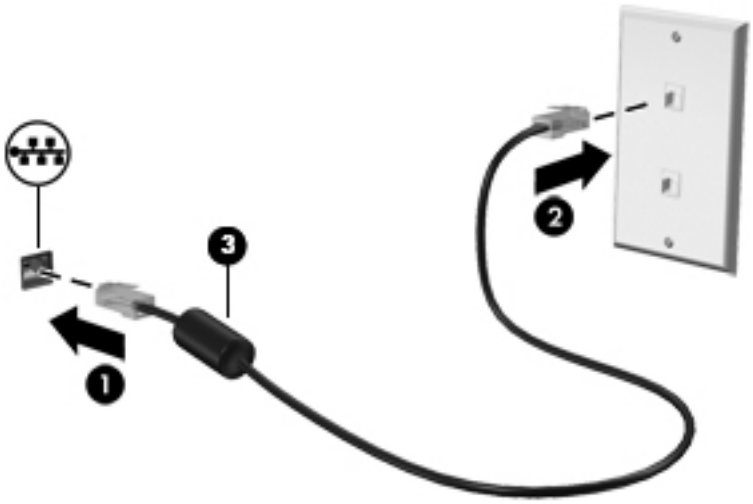
Connecting to a local area network (LAN)

Use a LAN connection if you want to connect the computer directly to a router in your home (instead of working wirelessly), or if you want to connect to an existing wired network at your office.

To connect the network cable, follow these steps:

1. Plug the network cable into the network jack **(1)** on the computer.
2. Plug the other end of the network cable into a network wall jack **(2)** or router.

NOTE: If the network cable contains noise suppression circuitry **(3)**, which prevents interference from TV and radio reception, orient the circuitry end of the cable toward the computer.



3 Enjoying entertainment features

Use your HP computer as an entertainment hub to socialize via the webcam, enjoy and manage your music, and download and watch movies. Or, to make your computer an even more powerful entertainment center, connect external devices like a monitor, a projector, a TV, speakers, headphones, and, on select models, high-definition devices.

Using the webcam

Your computer may have an integrated webcam. A webcam is a powerful social networking tool that allows you to communicate up close with friends and colleagues next door or on the other side of the world. With the webcam, you can stream video with your instant messaging software, and with the preinstalled software, guvcview, you can capture and share video and take still photos.

NOTE: For details about using your webcam, click the Help menu in the guvcview software.

Using audio

On HP computers that include an optical drive, you can play music CDs, download and listen to music, stream audio content from the web (including radio), record audio, or mix audio and video to create multimedia. To enhance your listening enjoyment, attach external audio devices such as speakers or headphones.

Connecting speakers

You can attach wired speakers to your computer by connecting them to USB ports (or the audio-out jack) on your computer or on a docking station.

To connect *wireless* speakers to your computer, follow the device manufacturer's instructions. To connect high-definition speakers to the computer, see Configuring audio settings (with HDMI TV) on page 13. Before connecting audio devices, be sure to adjust the volume.

Connecting headphones

You can connect wired headphones to the headphone jack on your computer.

To connect *wireless* headphones to your computer, follow the device manufacturer's instructions.

WARNING! To reduce the risk of personal injury, adjust the volume before putting on headphones, earbuds, or a headset. For additional safety information, see the *Regulatory, Safety and Environmental Notices*.

Connecting a microphone

To record audio, connect a microphone to the microphone jack on the computer. For best results when recording, speak directly into the microphone in a setting free of background noise.

Checking the sound

To check the system sound on your computer, follow these steps:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Sound** icon.
2. Click the **Sound Effects** tab, and then select one of the sound options under **Choose an alert sound** to test each sound.

To check the recording functions of the computer, follow these steps:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Sound** icon.
2. Click the **Input** tab, and then select **Line in** or **Internal Microphone** from the **Record sound from** panel on the left side of the window.
3. Adjust the input volume by moving the **Input volume** slider to the desired setting.

NOTE: For best results when recording, speak directly into the microphone in a setting free of background noise.

To confirm or change the audio settings on your computer, click the **Sound menu** icon at the right of the top panel.

Using video

Your HP computer is a powerful video device that enables you to watch streaming video from your favorite websites and download video and movies to watch on your computer, without needing to access a network.

To enhance your viewing enjoyment, use one of the video ports on the computer to connect an external monitor, projector, or TV. Most computers have a video graphics array (VGA) port, which connects analog video devices. Some computers have a DisplayPort, which connects an optional digital display device, such as a high-performance monitor or projector. Also, some computers have a high-definition multimedia interface (HDMI) port, which allows you to connect a high-definition monitor or TV.

IMPORTANT: Be sure that the external device is connected to the correct port on the computer, using the correct cable. Check the device manufacturer's instructions if you have questions.

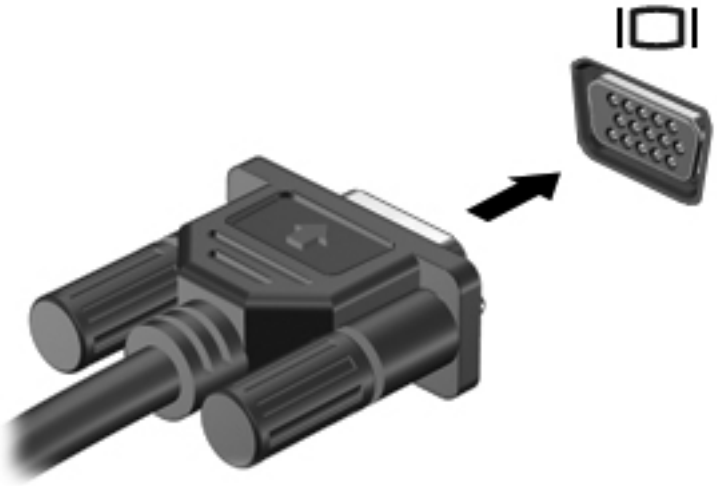
Connecting a VGA monitor or projector

To see the computer screen image on an external VGA monitor or projected for a presentation, connect a monitor or projector to the computer's VGA port.

NOTE: Adjust the screen resolution of the external device. Click the **System menu** icon at the far right of the top panel, click **Displays**, and then select a resolution from the drop-down menu next to **Resolution**. Click **Apply** to apply any changes.

To connect a monitor or projector:

1. Connect the VGA cable from the monitor or projector to the VGA port on the computer as shown.



2. Press f4 to alternate the screen image between 3 display states:

NOTE: Depending on your model, the function key for this operation may vary.

- **PC Screen only:** View the screen image on the computer only.
- **Duplicate:** View the screen image simultaneously on *both* the computer and external device.
- **Extend:** View the screen image extended across *both* the computer and external device.
- **Second screen only:** View the screen image on the external device only.

Each time you press f4, the display state changes.

If your external monitor is not detected after pressing f4, follow these steps:

1. Click the **System menu** icon at the far right of the top panel, and then click **Displays**.
2. Click the **Detect Displays** button.
3. Click the **On** radio button beneath the display layout. If the default monitor is not detected, set the resolution and the refresh rate using your external monitor specifications. Change the rotation if desired. If the display requires mirroring, click the **Mirror Displays** check box.
4. After the settings are configured, click **Apply**, and then click **OK**. Your computer may require rebooting.

DisplayPort

The DisplayPort connects the computer to a video or audio device, such as a high-definition television, or to any compatible digital or audio component. The DisplayPort delivers higher performance than the VGA external monitor port and improves digital connectivity.

NOTE: To transmit video and/or audio signals through the DisplayPort, you need a DisplayPort cable (purchased separately).

NOTE: One DisplayPort device can be connected to the DisplayPort port on the computer. The information displayed on the computer screen can be simultaneously displayed on the DisplayPort device.

To connect a video or audio device to the DisplayPort:

1. Connect one end of the DisplayPort cable to the DisplayPort port on the computer.

2. Connect the other end of the cable to the video device, and then see the device manufacturer's instructions for additional information.

NOTE: To remove the device cable, press down on the connector release button.

Connecting an HDMI TV or monitor

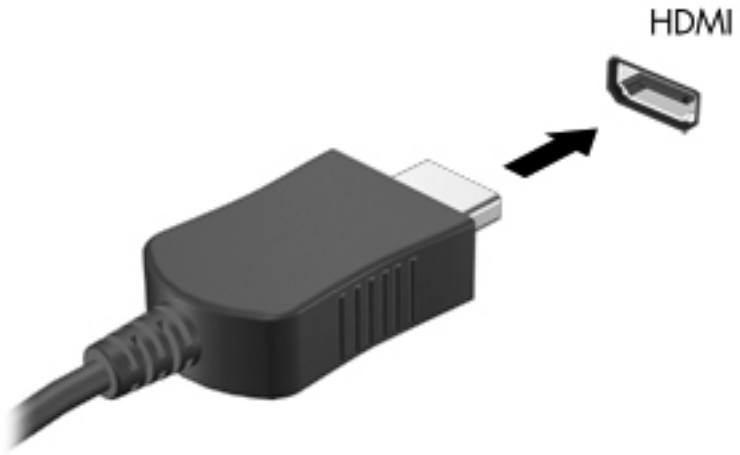
To see the computer screen image on a high-definition TV or monitor, connect the high-definition device according to the following instructions.

To connect an HDMI device to your computer, you need an HDMI cable, sold separately.

NOTE: Adjust the screen resolution of the external device, especially if you choose the "Extend" option. Click the **System menu** icon at the far right of the top panel, click **Displays** and then select a resolution from the drop-down menu next to **Resolution** for best results.

To connect a high-definition TV or monitor to your computer:

1. Connect one end of the HDMI cable to the HDMI port on the computer.



2. Connect the other end of the cable to the high-definition TV or monitor.
3. Press f4 to alternate the computer screen image between 3 display states:
   - **PC Screen only:** View the screen image on the computer only.
   - **Duplicate:** View the screen image simultaneously on *both* the computer and external device.
   - **Extend:** View the screen image extended across *both* the computer and external device.
   - **Second screen only:** View the screen image on the external device only.

   Each time you press f4, the display state changes.

Configuring audio settings (with HDMI TV)

HDMI is the only video interface that supports high-definition video and audio. After you connect an HDMI TV to the computer, you can then turn on HDMI audio by following these steps:

1. Click the **Sound menu** icon at the right of the top panel, and then click **Sound Settings**.
2. On the **Output** tab, click **Internal Audio Digital Stereo (HDMI)**.
3. Close the Sound window.

To return the audio stream to the computer speakers, follow these steps:

1. Click the **Sound menu** icon at the far right of the top panel, and then click **Sound Settings**.
2. On the **Output** tab, click **Internal Audio Analog Stereo**.
3. Close the Sound window.

4 Using the keyboard and pointing devices

Your computer allows easy on-screen navigation with a keyboard and pointing device. Select models also have action keys or hot key shortcuts that enable you to do common tasks. The TouchPad enables you to perform on-screen functions similar to those by an external mouse.

To explore the pointing device features and to select preferred settings:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings**.
2. Click **Mouse and Touchpad**.

Use an external USB mouse (purchased separately) by connecting it to one of the USB ports on the computer.

NOTE: Depending on the country or region, your keyboard may have different keys and keyboard functions than those discussed in this section.

Using the action keys

An action key performs an assigned function. The icons on the f1 through f4, and f6 through f12 keys illustrate the assigned function for that key. The f5 key performs the function listed in the table below.

To use an action key function, press the key.

The action key feature is enabled at the factory. You can disable this feature in Setup Utility (BIOS). See Using Setup Utility (BIOS) and System Diagnostics on page 40 for instructions on opening Setup Utility (BIOS), and then follow the instructions at the bottom of the screen.

To activate the assigned function after disabling the action key feature, you must press the fn key in combination with the appropriate action key.

CAUTION: Use extreme care when making changes in Setup Utility. Errors can prevent the computer from operating properly.

Icon	Key	Description
	f1	Launches the *Ubuntu Desktop Guide*.
	f2	Decreases the screen brightness incrementally as long as you hold down the key.
	f3	Increases the screen brightness incrementally as long as you hold down the key.

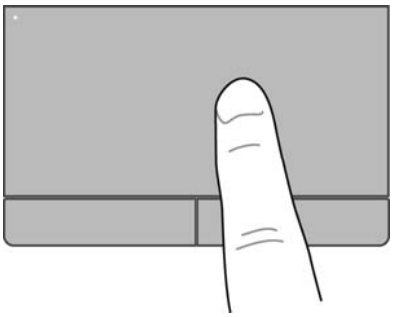
Icon	Key	Description
	f4	Switches the screen image between display devices connected to the system. For example, if a monitor is connected to the computer, each time you press the f4 key, the screen image alternates from the computer display to the monitor display to a simultaneous display on both the computer and the monitor. Most external monitors receive video information from the computer using the external VGA video standard. The f4 key can also alternate images among other devices that are receiving video information from the computer.
	f5	Launches the file browser and displays the contents of the Home Folder.
	f6	Plays the previous track of an audio CD or the previous section of a DVD.
	f7	Begins, pauses, or resumes playback of an audio CD or a DVD.
	f8	Plays the next track of an audio CD or the next section of a DVD.
	f9	Decreases speaker volume incrementally as long as you hold down the key.
	f10	Increases speaker volume incrementally as long as you hold down the key.
	f11	Mutes or restores speaker sound.
	f12	Turns the wireless feature on or off. **NOTE:** A wireless network must be set up before a wireless connection is possible.

Using the TouchPad

The TouchPad allows you to navigate the computer with simple finger movements.

Navigating

To move the on-screen pointer, slide one finger across the TouchPad in the direction you want the pointer to go.

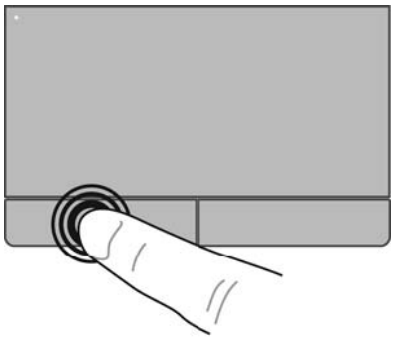


To click, double-click, and drag using your TouchPad:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Mouse and Touchpad > Touchpad** tab.
2. Select **Enable mouse clicks with touchpad**.

Selecting

Use the left and right TouchPad buttons as you would use the corresponding buttons on an external mouse.



Using TouchPad gestures

To use TouchPad gestures, place two fingers on the TouchPad at the same time or use the edges of the TouchPad.

NOTE: TouchPad gestures are not supported in all programs.

Turning gestures on and off

To turn the gestures on and off:

1. Click the **System menu** icon at the far right of the top panel and click **System Settings > Mouse and Touchpad > Touchpad** tab.
2. Under **Scrolling**, select the gesture that you want to turn on or off.
3. Click the **x** in the top left corner to close the window.

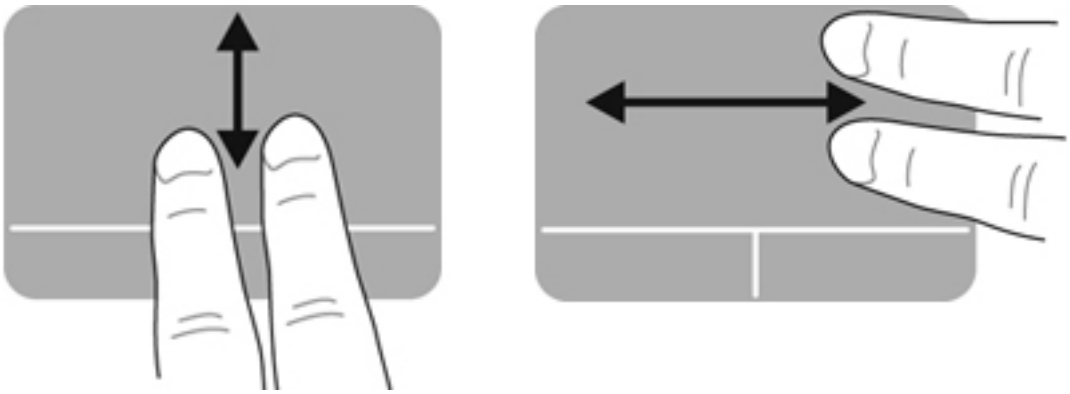
Horizontal scrolling

Horizontal scrolling is useful for moving up, down, or sideways on a page or image. To scroll, place two fingers slightly apart on the TouchPad, and then drag them across the TouchPad in an up, down, left, or right motion.

To enable horizontal scrolling:

1. Click the **System menu** icon at the far right of the top panel and click **System Settings > Mouse and Touchpad > Touchpad** tab.
2. Under **Scrolling**, select **Enable horizontal scrolling**
3. Click the **x** in the top left corner to close the window.

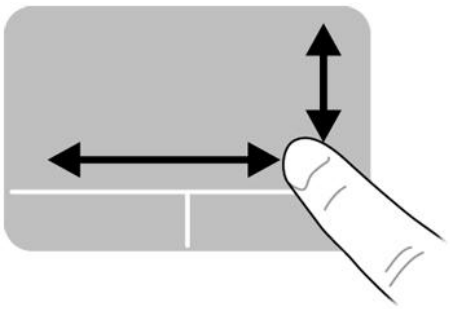
NOTE: Scrolling speed is controlled by finger speed.



Edge scrolling

Edge scrolling allows you to scroll using the edge of the TouchPad. When this is selected, slide your finger up and down the right side of your TouchPad to scroll vertically. When horizontal scrolling has been enabled, you can move your finger left and right along the bottom of the TouchPad to scroll horizontally.

NOTE: To enable horizontal scrolling, see Horizontal scrolling on page 17.



5 Managing power

Your computer can operate on either battery power or external power. When the computer is only running on battery power and an AC power source is not available to charge the battery, it is important to monitor and conserve the battery charge.

Shutting down the computer

CAUTION: Unsaved information is lost when the computer is shut down.

The shutdown command closes all open programs, including the operating system, and then turns off the display and computer.

Shut down the computer under any of the following conditions:

- When you need to replace the battery or to access components inside the computer
- When you are connecting an external hardware device that does not connect to a USB port
- When the computer will be unused and disconnected from external power for an extended period

To shut down the computer, follow these steps:

NOTE: If the computer is in the Suspend state or in Hibernation, you must first exit Suspend or Hibernation before shutdown is possible.

1. Save your work and close all open programs.
2. Click the **System menu** icon at the far right of the top panel, and then click **Shutdown > Shut Down**.

If the computer is unresponsive and you are unable to use the preceding shutdown procedure, try the following emergency procedures in the sequence provided:

- Press and hold the power button for at least 5 seconds.
- Disconnect the computer from external power, and then remove the battery if the computer includes a user-replaceable battery.

Setting power options

Using power-saving states

The computer has two power-saving states enabled at the factory: Suspend and Hibernation.

When Suspend is initiated, the power lights blink and the screen clears. Your work is saved to memory, letting you exit the Suspend state faster than exiting Hibernation. If the computer is in the Suspend state for an extended period or if the battery reaches a critical battery level while in the Suspend state, the computer initiates Hibernation.

When Hibernation is initiated, your work is saved to a hibernation file on the hard drive and the computer turns off.

CAUTION: To prevent possible audio and video degradation, loss of audio or video playback functionality, or loss of information, do not initiate Suspend or Hibernation while reading from or writing to a disc or an external media card.

NOTE: You cannot initiate any type of networking connection or perform any computer functions while the computer is in the Suspend state or in Hibernation.

Initiating and exiting Suspend

The system is set at the factory to initiate Suspend after a period of inactivity when running on battery power or on external power.

Power settings and timeouts can be changed by clicking the **System menu** icon at the far right of the top panel, and then clicking **System Settings > Power** icon.

With the computer on, you can initiate Suspend in any of the following ways:

- Briefly press the power button.
- Close the display.

  NOTE: This method works only when the computer is running on battery power.

- Click the **System menu** icon at the far right of the top panel, and then click **Suspend**.

To exit Suspend:

▲ Briefly press the power button.

When the computer exits Suspend, the power lights turn on and your work returns to the screen where you stopped working.

Initiating and exiting Hibernation

The system is set at the factory to initiate Hibernation after a period of inactivity when running on battery power or on external power, or when the battery reaches a critical battery level.

Power settings and timeouts can be changed by clicking the **System menu** icon at the far right of the top panel, and then clicking **System Settings > Power** icon.

With the computer on, you can initiate Hibernation in the following ways:

- Briefly press the power button and click **Hibernate**.
- Click the **System menu** icon at the far right of the top panel, and then click **Hibernate**.

To exit Hibernation:

▲ Briefly press the power button.

When the computer exits Hibernation, the power lights turn on and your work returns to the screen where you stopped working.

Using the Power icon

The **Power** icon is located in the System Settings folder. The **Power** icon allows you to access power settings, view remaining battery charge, and select a different power plan.

- To display the percentage of remaining battery charge when the computer is running on battery power, click the **System menu** icon at the far right of the top panel, and then click **System Settings > Power** icon.
- To display the battery charge time when the computer is connected to external power, click the **Battery menu** icon at the right of the top panel.
- To access power settings, click the **System menu** icon at the far right of the top panel, and then click **System Settings > Power** icon.

Using Power Settings

Power Settings is a collection of system settings that manages how the computer uses power. You can customize Power Settings to help you conserve power or maximize performance.

Viewing the current Power Settings

▲ Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Power** icon.

NOTE: To quickly access power settings, you can also click the **Battery menu** icon at the right of the top panel, and then click **Power Settings**.

Changing the current Power Settings

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Power** icon.
2. Change the settings under **On battery power** and **When plugged in**, as needed.

Using battery power

When a charged battery is in the computer and the computer is connected to external power, the computer runs on AC power.

If the computer contains a charged battery and is running on external AC power supplied through the AC adapter, the computer switches to battery power if the AC adapter is disconnected from the computer.

NOTE: When you disconnect AC power, the screen brightness is automatically decreased to save battery life. For information on increasing or decreasing screen brightness, see Using the keyboard and pointing devices on page 14.

You can keep a battery in the computer or in storage, depending on how you work. Keeping the battery in the computer whenever the computer is connected to AC power charges the battery and also protects your work in case of a power outage. However, when the computer is off and disconnected from external power, the battery in the computer slowly discharges.

WARNING! To reduce potential safety issues, use only the battery provided with the computer, a replacement battery provided by HP, or a compatible battery purchased from HP.

Computer battery life varies, depending on power management settings, programs running on the computer, screen brightness, external devices connected to the computer, and other factors.

Displaying the remaining battery charge

▲ Click the **Battery menu** icon at the right of the top panel.

Charging a battery

⚠ **WARNING!** Do not charge the computer battery while you are aboard aircraft.

The battery charges whenever the computer is plugged into external power through an AC adapter or an optional power adapter.

The battery charges whether the computer is off or in use, but it charges faster when the computer is off.

Charging may take longer if a battery is new, has been unused for 2 weeks or more, or is much warmer or cooler than room temperature.

To prolong battery life and optimize the accuracy of battery charge displays, follow these recommendations:

- If you are charging a new battery, charge it fully before turning on the computer.

NOTE: If the computer is on while the battery is charging, the battery meter in the notification area may show 100 percent charge before the battery is fully charged.

- Allow the battery to discharge below 5 percent of a full charge through normal use before charging it.
- If the battery has been unused for one month or more, calibrate the battery instead of simply charging it.

Maximizing battery life

To maximize battery life:

1. Click the **Battery menu** icon in the top panel, and then click **Power Settings**.
2. Under **On battery power:**
   - Select **30 minutes** from the drop-down menu to the right of **Suspend when inactive for**.
   - Select the **Hibernate** or **Power off** option to the right of **When power is critically low**.
   - Select the **Suspend** or **Hibernate** option to the right of **When the lid is closed**.
3. Click **Close**.

Managing low battery levels

The information in this section describes the alerts and system responses set at the factory. Some low-battery alerts and system responses can be changed using power settings. Changes set using power settings do not affect lights.

Identifying low battery levels

When a battery that is the sole power source for the computer reaches a low or critical battery level, the following behavior occurs:

- If Hibernation is enabled and the computer is on or in Suspend state, the computer initiates Hibernation.
- If Hibernation is disabled and the computer is on or in Suspend state, the computer remains briefly in Suspend state, and then shuts down and loses any unsaved information.

Resolving a low battery level

Resolving a low battery level when external power is available

▲ Connect one of the following devices:

- AC adapter
- Optional power adapter purchased as an accessory from HP

Resolving a low battery level when a charged battery is available

1. Turn off the computer or initiate Hibernation.
2. Replace the discharged battery with a charged battery.
3. Turn on the computer.

Resolving a low battery level when no power source is available

- Initiate Hibernation.
- Save your work and shut down the computer.

Resolving a low battery level when the computer cannot exit Hibernation

When the computer lacks sufficient power to exit Hibernation, follow these steps:

1. Replace the discharged battery with a charged battery, or connect the AC adapter to the computer and to external power.
2. Exit Hibernation by briefly pressing the power button.

Conserving battery power

- Turn off wireless and local area network (LAN) connections and exit modem applications when you are not using them.
- Disconnect unused external devices that are not plugged into an external power source.
- Stop, disable, or remove any external media cards that you are not using.
- Decrease screen brightness.
- Initiate Suspend or Hibernation, or shut down when you are not using the computer.

Storing a battery

⚠ **CAUTION:** To reduce the risk of damage to a battery, do not expose it to high temperatures for extended periods of time.

If a computer will be unused and unplugged from external power for more than 2 weeks, remove the battery and store it separately.

To prolong the charge of a stored battery, place it in a cool, dry place.

NOTE: A stored battery should be checked every 6 months. If the capacity is less than 50 percent, recharge the battery before returning it to storage.

Calibrate a battery before using it if it has been stored for one month or more.

Disposing of a used battery

WARNING! To reduce the risk of fire or burns, do not disassemble, crush, or puncture; do not short external contacts; do not dispose of in fire or water.

Refer to the *Regulatory, Safety and Environmental Notices* for battery disposal information.

Replacing the battery

Computer battery life varies, depending on power management settings, programs running on the computer, screen brightness, external devices connected to the computer, and other factors.

You can find details about the battery by clicking the **Battery menu** icon at the right of the top panel.

NOTE: To ensure that you always have battery power when you need it, HP recommends purchasing a new battery when the storage capacity indicator turns green-yellow.

Using external AC power

NOTE: For information on connecting to AC power, refer to the *Setup Instructions* poster provided in the computer box.

The computer does not use battery power when the computer is connected to AC external power with an approved AC adapter or an optional docking/expansion device.

WARNING! To reduce potential safety issues, use only the AC adapter provided with the computer, a replacement AC adapter provided by HP, or a compatible AC adapter purchased from HP.

Connect the computer to external AC power under any of the following conditions:

WARNING! Do not charge the battery while you are aboard aircraft.

- When you are charging or calibrating a battery
- When you are installing or modifying system software
- When writing information to a disc (select models only)
- When performing a backup or recovery

When you connect the computer to external AC power, the following events occur:

- The battery begins to charge.
- If the computer is turned on, the **Battery menu** icon in the top panel changes appearance.

When you disconnect external AC power, the following events occur:

- The computer switches to battery power.
- The screen brightness is automatically decreased to save battery life.

Testing an AC adapter

Test the AC adapter if the computer exhibits any of the following symptoms when it is connected to AC power:

- The computer does not turn on.
- The display does not turn on.
- The power lights are off.

To test the AC adapter:

1. Shut down the computer.
2. Remove the battery from the computer.
3. Connect the AC adapter to the computer, and then plug it into an AC outlet.
4. Turn on the computer.
    - If the power lights turn *on*, the AC adapter is functioning properly.
    - If the power lights remain *off*, check the connection from the AC adapter to the computer and the connection from the AC adapter to the AC outlet to make sure the connections are secure.
    - If the connections are secure and the power lights remain *off*, the AC adapter is not functioning and should be replaced.

Contact support for information on obtaining a replacement AC power adapter.

6 Managing and sharing information

Drives are digital storage devices or solid-state drives that help you store, manage, share, and access information. Your computer has an internal hard drive that stores your computer's software, operating system, as well as providing storage for all of your personal files. Some computers also have a built-in optical drive that allows you to read or write to a CD or DVD.

For added capacity or functionality, connect an external drive (purchased separately), such as an optical drive or hard drive, or insert a digital storage card to import information directly from your phone or camera. A Universal Serial Bus (USB) flash drive, connected to the USB port on your computer, also allows quick data transfer. Some devices use the computer's power to run; others have their own power source. Some devices come with software that must be installed.

NOTE: For information about connecting external wireless devices, see Connecting to a network on page 4.

NOTE: For more information about required software and drivers, or to learn which computer port to use, see the manufacturer's instructions.

Using a USB device

Most computers have more than one USB port, because this versatile interface allows you to connect numerous kinds of external devices, such as a USB keyboard, mouse, external drive, printer, scanner, or USB hub, to your computer.

Your computer may have more than one type of USB port. Be sure to purchase devices that are compatible with your computer.

Type	Description
USB 2.0	Transfers data at 60 MB/s.
USB 3.0	Transfers data at 640 MB/s. USB 3.0 ports, also known as SuperSpeed ports, are also compatible with USB 1.0 and 2.0 devices.

Connecting a USB device

CAUTION: To reduce the risk of damage to a USB connector, use minimal force to connect the device.

▲ Connect the USB cable for the device to the USB port.

NOTE: The USB port on your computer may look slightly different from the illustration in this section.

NOTE: The first time you connect a USB device, a message in the notification area lets you know that the device is recognized by the computer.

Removing a USB device

CAUTION: To reduce the risk of damage to a USB connector, do not pull on the cable to remove the USB device.

CAUTION: Use the following procedure to safely remove the USB device.

1. To remove a USB device, save your information and close all programs associated with the device.
2. Open File Browser by selecting the **Home Folder** located on the left side of the desktop in the **Launcher**.
3. Click the **Eject** icon next to the device name in the **Devices** list on the left pane of File Browser. The USB device icon disappears from the list and the device can be safely removed.
4. Remove the device.

NOTE: You can also right-click the **Eject** icon next to the device name and select either **Eject** or **Safely Remove**. The USB device icon disappears from the **Devices** list and the device can be safely removed.

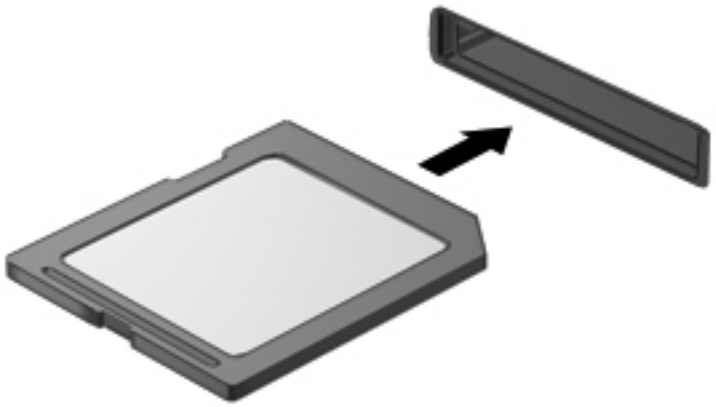
CAUTION: To safely remove an external USB DVD drive, always right-click the icon next to the device name and select **Safely Remove**. This allows the DVD file system to unmount from the operating system and power down the device.

Inserting and removing a digital storage card

To insert a digital storage card:

CAUTION: To reduce the risk of damage to the digital card connectors, use minimal force to insert a digital card.

1. Hold the card label-side up, with the connectors facing the computer.
2. Insert the card into the digital storage slot, and then press in on the card until it is firmly seated.



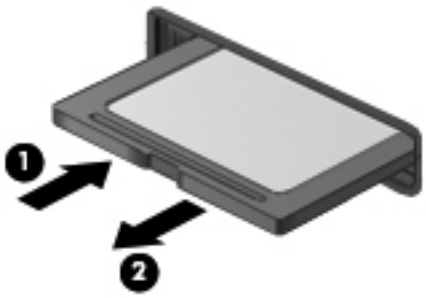
To remove a digital storage card:

CAUTION: To reduce the risk of loss of data or an unresponsive system, use the following procedure to safely remove the digital card.

1. Save your information and close all programs associated with the digital card.
2. Open File Browser from the **Home Folder** located on the left side of the desktop in the **Launcher**.
3. Click the **Eject** icon next to the digital card name in the **Devices** list on the left pane of File Browser. The USB device icon disappears from the list and the device can be safely removed.

NOTE: You are prompted that it is safe to remove the hardware device.

4. Press in on the card **(1)**, and then remove it from the slot **(2)**.



NOTE: If the card is not ejected, pull the card out of the slot.

Using optical drives

An optical disc drive uses laser light to read or store large amounts of information. Some drives can only read information, but others can also write (burn) information onto a blank disc.

Use these tips for best performance of your optical drive:

- When the battery is the only source of power, be sure the battery is sufficiently charged before writing to media.
- Do not type on the keyboard or move the computer while an optical drive is writing to a disc. The write process is sensitive to vibration.
- Make sure you have installed the latest software updates for the drive.
- If the disc you are using is not clean, wipe it with a dry, lint-free, soft cloth.

Your computer may include an optical drive that supports one or more of the following disc technologies:

- CD—A compact disc stores data that is read by a laser from the optical disc drive. The following CD formats are available:
  - CD-Recordable (CD-R), which allows the computer to read information and to record information one time on the CD. Once the information is recorded on the CD-R disc, it cannot be changed or erased; it is permanent.
  - CD-Re-Writable (CD-RW), which allows you to read information and record information many times to the CD. Information on the CD can be erased.
- DVD—A digital video disc is a high-capacity optical disc. It can store more information than a CD. A double-sided DVD can store up to 17 GB. The following DVD formats are available:
  - DVD-Recordable (DVD-R or DVD+R), which allows the computer to read information and to record information one time on the DVD. After the information is recorded on the disc, it cannot be changed or erased; it is permanent. The DVDs can be used in DVD±R drives.
  - DVD-Re-Writable (DVD-RW or DVD+RW), which allows the computer to read information and record information many times to the disc. Information on the disc can be erased. The DVDs can be used in DVD±R drives.

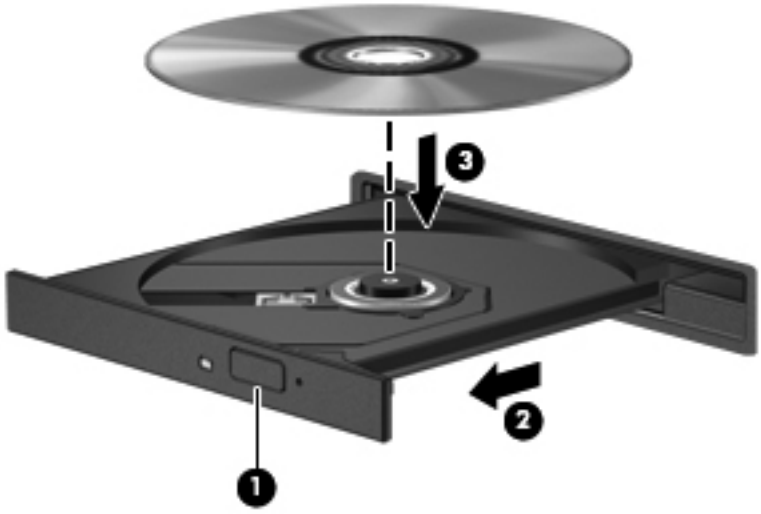
Inserting an optical disc

Tray-load

1. Turn on the computer.
2. Press the release button **(1)** on the drive bezel to release the disc tray.
3. Pull out the tray **(2)**.
4. Hold the disc by the edges to avoid touching the flat surfaces and position the disc label-side up over the tray spindle.

NOTE: If the tray is not fully accessible, tilt the disc carefully to position it over the spindle.

5. Gently press the disc **(3)** down onto the tray spindle until the disc snaps into place.



6. Close the disc tray.

NOTE: After you insert a disc, a short pause is normal. If you have not selected a media player, an AutoPlay dialog box opens. It prompts you to select how you want to use the media content.

Slot-load

CAUTION: Do not insert **8-cm** optical discs into a slot-load optical drive. It may cause damage to the optical drive.

1. Turn on the computer.
2. Hold the disc by the edges to avoid touching the flat surfaces and position the disc label-side up.
3. Gently slide the disc into the slot-load optical drive.

Removing an optical disc

Tray-load

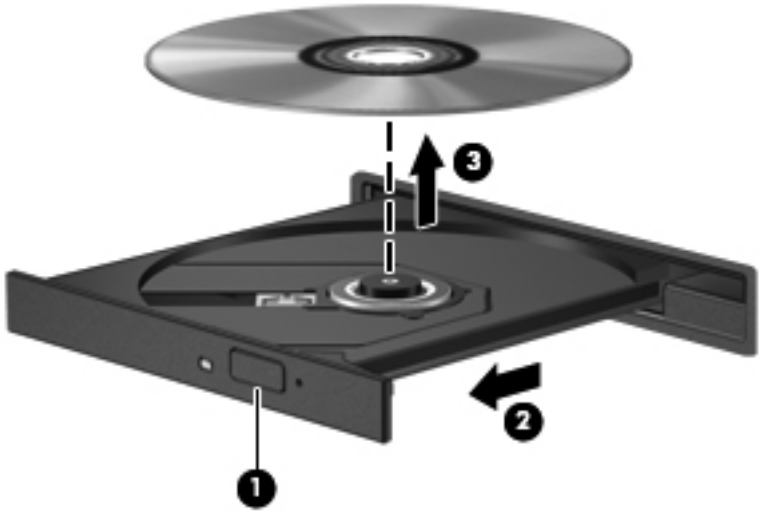
There are 2 ways to remove a disc, depending on whether the disc tray opens normally or not.

When the disc tray opens normally

1. Press the release button **(1)** on the drive bezel to release the disc tray, and then gently pull out the tray **(2)** until it stops.

2. Remove the disc **(3)** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disc by the edges and avoid touching the flat surfaces.

NOTE: If the tray is not fully accessible, tilt the disc carefully as you remove it.



3. Close the disc tray and place the disc in a protective case.

When the disc tray fails to open normally

1. Insert the end of a paper clip **(1)** into the release access in the front bezel of the drive.
2. Press in gently on the paper clip until the tray is released, and then pull out the tray **(2)** until it stops.

3. Remove the disc **(3)** from the tray by gently pressing down on the spindle while lifting the outer edges of the disc. Hold the disc by the edges and avoid touching the flat surfaces.

NOTE: If the tray is not fully accessible, tilt the disc carefully as you remove it.

4. Close the disc tray and place the disc in a protective case.

Slot-load

1. Press the release button **(1)** next to the drive.
2. Remove the disc **(2)** by holding it by the edges, and avoid touching the flat surfaces.

3. Place the disc in a protective case.

7 Maintaining your computer

Updating programs and drivers

HP recommends that you update your programs and drivers on a regular basis to the latest versions. Updates can resolve issues and bring new features and options to your computer. Technology is always changing, and updating programs and drivers allows your computer to run the latest technology available. For example, older graphics components might not work well with the most recent gaming software. Without the latest driver, you would not be getting the most out of your equipment.

There are two ways you can obtain updates for your computer:

- Go to http://www.hp.com/support to download the latest versions of HP programs and drivers. In addition, register to receive automatic update notifications when they become available.
- Set your computer to receive automatic updates.

To set your computer to receive free automatic Ubuntu updates:

1. Click the **System menu** icon at the far right of the top panel, and then click **Software up to Date**.
2. In the Update Manager window, click the **Check** button to check for new software updates.
3. Click the box next to each update that you want to install, and then click the **Install Updates** button.
4. Click **Close** after the updates have been installed.

NOTE: To change the settings for software updates, click the **Settings** button on the bottom of the Update Manager window.

Cleaning your computer

Cleaning your computer and external devices helps keep them in good working condition. If you don't clean your computer, dust and dirt particles can build up.

CAUTION: Avoid using the following cleaning products to clean your computer:

Strong solvents, such as alcohol, acetone, ammonium chloride, methylene chloride, and hydrocarbons, which can permanently damage the surface of the computer.

Cleaning the display, sides, and cover

Gently wipe the display using a soft, lint-free cloth moistened with an *alcohol-free* glass cleaner. Allow the screen to dry before closing the computer cover.

Use a pre-moistened germicidal wipe to clean the sides and cover. Fibrous materials, such as paper towels, can scratch the computer.

NOTE: When cleaning the cover of the computer, use a circular motion to aid in removing dirt and debris.

Cleaning the TouchPad and keyboard

CAUTION: Never allow liquids to drip between the keys on the keyboard, even when you are cleaning the computer. This can permanently damage internal components.

- To clean and disinfect the TouchPad and keyboard, use a soft microfiber cloth or a static-free cloth without oil (such as a chamois cloth) moistened with an *alcohol-free* glass cleaner or use an acceptable germicidal disposable wipe.
- To prevent keys from sticking and to remove dust, lint, and particles from the keyboard, use a can of compressed air with a straw extension.

WARNING! To reduce the risk of electric shock or damage to internal components, do not use a vacuum cleaner attachment to clean the keyboard. A vacuum cleaner can deposit household debris on the keyboard surface.

Traveling with or shipping your computer

If you have to travel with or ship your computer, here are some tips to keep in mind to keep your equipment safe.

- Prepare the computer for traveling or shipping:
  - Back up your information to an external drive.
  - Remove all discs and all external media cards, such as digital storage cards, from the computer.
  - Turn off, and then disconnect all external devices.
  - Remove any media from the drive before removing the drive from a drive bay.

    CAUTION: Perform this action before shipping, storing, or traveling with a drive. This will help reduce the risk of damage to the computer, damage to a drive, or loss of information.
  - Shut down the computer.
- Take along a backup of your information. Keep the backup separate from the computer.
- When traveling by air, carry the computer as hand luggage; do not check it in with the rest of your luggage.

CAUTION: Avoid exposing a drive to magnetic fields. Security devices with magnetic fields include airport walk-through devices and security wands. Airport conveyer belts and similar security devices that check carry-on baggage use X-rays instead of magnetism and do not damage drives.

- If you plan to use the computer during a flight, listen for the in-flight announcement that tells you when you are allowed to use your computer. In-flight computer use is at the discretion of the airline.
- If the computer will be unused and disconnected from external power for more than 2 weeks, remove the battery and store it separately.
- If you are shipping the computer or a drive, use suitable protective packaging and label the package “FRAGILE.”
- If the computer has a wireless device installed, the use of these devices may be restricted in some environments. Such restrictions may apply onboard aircraft, in hospitals, near explosives,

and in hazardous locations. If you are uncertain of the policy that applies to the use of a particular device, ask for authorization to use your computer before you turn it on.

- If you are traveling internationally, follow these suggestions:
  - Check the computer-related customs regulations for each country or region on your itinerary.
  - Check the power cord and adapter requirements for each location in which you plan to use the computer. Voltage, frequency, and plug configurations vary.

WARNING! To reduce the risk of electric shock, fire, or damage to the equipment, do not attempt to power the computer with a voltage converter kit sold for appliances.

8 Securing your computer and information

Protecting the computer

NOTE: Security solutions are designed to act as deterrents, but they may not deter software attacks or prevent the computer from being mishandled or stolen.

Security features provided with your computer can protect the computer, personal information, and data from a variety of risks. The way you use your computer will determine which security features you need to use.

The operating system offers certain security features. Additional security features are listed in the following table. Most of these additional security features can be configured in Setup Utility.

To protect against	Use this security feature
Unauthorized use of the computer	Power-on authentication using passwords
Unauthorized access to Setup Utility (f10)	Administrator password in Setup Utility*
Unauthorized access to data	• Firewall software (not installed in the Ubuntu operating system by default) • Operating system updates
Unauthorized access to Setup Utility settings and other system identification information	Administrator password in Setup Utility*
Unauthorized removal of the computer	Security cable slot (used with an optional security cable)

*Setup Utility is a utility accessed by pressing f10 when the computer is turned on or restarted. When using Setup Utility, you must use the keys on your computer to navigate and make selections.

Using passwords

A password is a group of characters that you choose to secure your computer information. Several types of passwords can be set, depending on how you want to control access to your information. Passwords can be set in the operating system or in Setup Utility, which is preinstalled on the computer.

NOTE: To reduce the risk of being locked out of the computer, record each password and store it in a secure place.

Setting passwords in the operating system

Operating system passwords	Function
Root password	Protects access to an operating system root-level account.
User password	Protects access to an operating system user account.

Setting passwords in Setup Utility (BIOS)

Setup Utility passwords	Function
Administrator password*	• Protects access to Setup Utility. • After this password is set, it must be entered each time you access Setup Utility. **CAUTION:** If you forget your administrator password, you cannot access Setup Utility. **NOTE:** The administrator password can be used in place of the power-on password. **NOTE:** Your administrator password is not displayed as it is set, entered, changed, or deleted. **NOTE:** If you enter the power-on password at the first password check before the “Press the ESC key for Startup Menu” message is displayed, you must enter the administrator password to access Setup Utility.
Power-on password*	• Protects access to the computer contents. • After this password is set, it must be entered each time you turn on or restart the computer, or exit Hibernation. **CAUTION:** If you forget your power-on password, you cannot turn on or restart the computer, or exit Hibernation. **NOTE:** The administrator password can be used in place of the power-on password. **NOTE:** A power-on password is not displayed as it is set, entered, changed, or deleted.
*For details about each of these passwords, refer to the following topics.	

Managing an administrator password

To set, change, or delete this password, follow these steps:

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.
2. Use the arrow keys to select **Security > Set Administrator Password**, and then press enter.
   - To set an administrator password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To change an administrator password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To delete an administrator password, type your current password in the **Enter Password** field, and then press enter 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes take effect when the computer restarts.

Entering an administrator password

At the **Enter Password** prompt, type your administrator password, and then press enter. After 3 unsuccessful attempts to enter the administrator password, you must restart the computer and try again.

Managing a power-on password

To set, change, or delete this password, follow these steps:

1. Open Setup Utility by turning on or restarting the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.
2. Use the arrow keys to select **Security > Set Power-On Password**, and then press enter.
   - To set a power-on password, type your password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To change a power-on password, type your current password in the **Enter Current Password** field, type a new password in the **Enter New Password** and **Confirm New Password** fields, and then press enter.
   - To delete a power-on password, type your current password in the **Enter Current Password** field, and then press enter 4 times.
3. To save your changes and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**.

Your changes take effect when the computer restarts.

Entering a power-on password

At the **Enter Password** prompt, type your password, and then press enter. After 3 unsuccessful attempts to enter the password, you must restart the computer and try again.

Using Internet security software

When you use your computer to access email, a network, or the Internet, you potentially expose your computer to computer viruses, spyware, and other online threats. To help protect your computer, Internet security software that includes antivirus and firewall features may be preinstalled on your computer as a trial offer. To provide ongoing protection against newly discovered viruses and other security risks, security software must be kept up to date. It is strongly recommended that you upgrade the security software trial offer or purchase the software of your choice in order to fully protect your computer.

Using antivirus software

Computer viruses can disable programs, utilities, or the operating system, or cause them to function abnormally. Antivirus software can detect most viruses, destroy them, and in most cases, repair any damage they have caused.

Using firewall software

Firewalls are designed to prevent unauthorized access to a system or network. The Ubuntu operating system ships with no open ports; therefore, it does not include a firewall utility in the base operating system. However, you may use the Ubuntu Software Center, located in the **Launcher** on the left side of the desktop, to download Gufw, a free Ubuntu firewall utility.

To install Gufw:

1. Click on the **Ubuntu Software Center** folder located in the **Launcher** on the left side of the desktop.
2. Enter Gufw in the search bar and press enter.
3. Double-click the **Firewall Configuration** icon, and then click the **Install** button.
4. Follow the on-screen instructions.

To view or modify firewall settings after installing Gufw:

1. Select **Ubuntu Software Center** from the **Launcher** on the left side of the desktop, and then click **Gufw**.

   NOTE: When accessing Gufw, you are prompted for the root password.

2. Follow the on-screen instructions.

NOTE: Under some circumstances a firewall can block access to Internet games, interfere with printer or file sharing on a network, or block authorized email attachments. To temporarily resolve the problem, disable the firewall, perform the task that you want to perform, and then reenable the firewall immediately. To permanently resolve the problem, you must reconfigure the firewall.

Securing your wireless network

When you set up your wireless network, always enable security features. For more information, see Protecting your WLAN on page 6.

Backing up your software applications and information

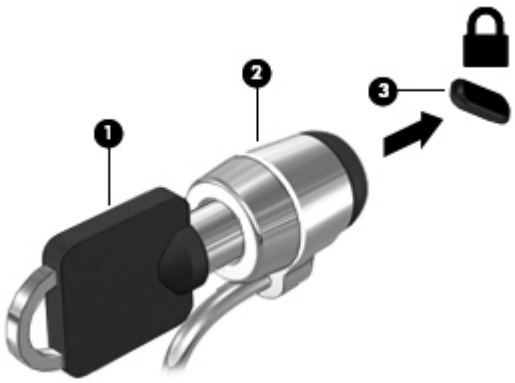
Regularly back up your software applications and information to protect them from being permanently lost or damaged through a virus attack or a software or hardware failure. For more information, see Backing up, restoring, and recovering on page 44.

Using an optional security cable lock

A security cable lock, which is purchased separately, is designed to act as a deterrent, but it may not prevent the computer from being mishandled or stolen. Security cable locks are only one of several methods that should be employed as part of a complete security solution to help maximize theft protection.

The security cable slot on your computer may look slightly different from the illustration in this section.

1. Loop the security cable lock around a secured object.
2. Insert the key **(1)** into the security cable lock **(2)**.
3. Insert the security cable lock into the security cable slot on the computer **(3)**, and then lock the security cable lock with the key.



4. Remove the key and keep it in a safe place.

9 Using Setup Utility (BIOS) and System Diagnostics

Setup Utility, or Basic Input/Output System (BIOS), controls communication between all the input and output devices on the system (such as disk drives, display, keyboard, mouse, and printer). Setup Utility includes settings for the types of peripherals installed, the startup sequence of the computer, and the amount of system and extended memory.

NOTE: Use extreme care when making changes in Setup Utility. Errors can prevent the computer from operating properly.

Starting Setup Utility

- Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f10.

Using Setup Utility

Changing the language of Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **System Configuration > Language**, and then press enter.
3. Use the arrow keys to select a language, and then press enter.
4. When a confirmation prompt with your language selected is displayed, press enter.
5. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

Your change takes effect immediately.

Navigating and selecting in Setup Utility

Setup Utility does not support the TouchPad. Navigation and selection are by keystroke.

- To choose a menu or a menu item, use the arrow keys.
- To choose an item in a list or to toggle a field—for example an Enable/Disable field—use either the arrow keys or f5 and f6.
- To select an item, press enter.
- To close a text box or return to the menu display, press esc.
- To display additional navigation and selection information while Setup Utility is open, press f1.

Displaying system information

1. Start Setup Utility.
2. Select the **Main** menu. System information such as the system time and date, and identification information about the computer is displayed.
3. To exit Setup Utility without changing any settings, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Restoring factory default settings in Setup Utility

1. Start Setup Utility.
2. Use the arrow keys to select **Exit > Load Setup Defaults**, and then press enter.
3. When the Setup Confirmation is displayed, press enter.
4. To save your change and exit Setup Utility, use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

The Setup Utility factory settings take effect when the computer restarts.

NOTE: Your password, security, and language settings are not changed when you restore the factory settings.

Exiting Setup Utility

- To exit Setup Utility and save your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Saving Changes**, and then press enter.

- To exit Setup Utility without saving your changes from the current session:

  If the Setup Utility menus are not visible, press esc to return to the menu display. Then use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Updating the BIOS

Updated versions of the BIOS may be available on the HP website.

Most BIOS updates on the HP website are packaged in compressed files called *SoftPaqs*.

Some download packages contain a file named Readme.txt, which contains information regarding installing and troubleshooting the file.

Determining the BIOS version

To determine whether available BIOS updates contain later BIOS versions than those currently installed on the computer, you need to know the version of the system BIOS currently installed.

BIOS version information (also known as *ROM date* and *System BIOS*) can be displayed by using Setup Utility.

1. Start Setup Utility.
2. If the system information is not displayed, use the arrow keys to select the **Main** menu.

   BIOS and other system information is displayed.
3. To exit Setup Utility, use the arrow keys to select **Exit > Exit Discarding Changes**, and then press enter.

Downloading a BIOS update

CAUTION: To reduce the risk of damage to the computer or an unsuccessful installation, download and install a BIOS update only when the computer is connected to reliable external power using the AC adapter. Do not download or install a BIOS update while the computer is running on battery power, or connected to an optional power source. During the download and installation, follow these instructions:

Do not disconnect power from the computer by unplugging the power cord from the AC outlet.

Do not shut down the computer or initiate Suspend or Hibernation.

Do not insert, remove, connect, or disconnect any device, cable, or cord.

1. Access the page on the HP website that provides software for your computer.
2. Follow the on-screen instructions to identify your computer and access the BIOS update you want to download.
3. At the download area, follow these steps:

   a. Identify the BIOS update that is later than the BIOS version currently installed on your computer. Make a note of the date, name, or other identifier. You may need this information to locate the update later, after it has been downloaded to your hard drive.

   b. Follow the on-screen instructions to download your selection to the hard drive.

      Make a note of the path to the location on your hard drive where the BIOS update is downloaded. You will need to access this path when you are ready to install the update.

NOTE: If you connect your computer to a network, consult the network administrator before installing any software updates, especially system BIOS updates.

BIOS installation procedures vary. Follow any instructions that are displayed on the screen after the download is complete.

NOTE: After a message on the screen reports a successful installation, you can delete the downloaded file from your hard drive.

Using System Diagnostics

System Diagnostics allows you to run diagnostic tests to determine if the computer hardware is functioning properly.

To start System Diagnostics:

1. Turn on or restart the computer. While the “Press the ESC key for Startup Menu” message is displayed in the lower-left corner of the screen, press esc. When the Startup Menu is displayed, press f2.
2. Click the diagnostic test you want to run, and then follow the on-screen instructions.

NOTE: If you need to stop a diagnostics test while it is running, press esc.

10 Backing up, restoring, and recovering

Recovery after a system failure is as good as your most recent backup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup.

Performing a system recovery

The Deja Dup Restore Tool allows you to repair or restore the computer to its original factory state. You can create an image restore DVD using a DVD±RW optical drive. You can also create a restore image on a USB storage device.

CAUTION: Using Restore completely erases hard drive contents and reformats the hard drive. All files you have created and any software installed on the computer are permanently removed. The recovery tool reinstalls the original operating system and programs and drivers that were installed at the factory. Software, drivers, and updates not installed at the factory must be manually reinstalled. Personal files must be restored from a backup.

NOTE: HP recommends that you create the image restore in the event of a system failure.

Creating the restore DVDs

The restore creation software creates a set of system restore discs using blank, writable DVDs (DVD-R or DVD+R). HP recommends using blank DVD+R discs from a manufacturer you trust, because these recovery DVDs are so important. You need approximately 3 blank DVD+R discs. The program states how many discs are needed at the beginning of the process.

To create restore DVDs:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select the DVD from the drop-down list.
3. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.
4. Follow the on-screen instructions.

Creating a restore image on a USB device

NOTE: Be sure AC power is connected to the computer you begin.

Verify the exact amount of free space on your storage device before you begin the creation process. For most models, you will need at least 8 GB of free space on the storage device. However, depending on the drivers and software installed on your computer, you may need slightly more than 8 GB of space. **HP recommends that you use a 16 GB device or above for best results.**

IMPORTANT: Remember to insert your USB device into the USB port on the computer before starting this procedure.

To create the restore image:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup**.
2. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup location**, and select the USB device from the drop-down list.

NOTE: If the USB device is not listed in the drop-down list for Backup Location, select **Local Folder**, and then click the **Choose Folder** button. Select the USB device from the panel on the left side of the Choose Folder window, and click **OK**.

3. Select **Overview** from the panel on the left side of the window, and then click **Backup Now**.
4. Follow the on-screen instructions.

Performing recovery using the restore DVD

NOTE: The following procedure uses the F11 BIOS Recovery feature to perform the recovery.

1. If possible, back up all personal files.
2. Shut down the computer.
3. Be sure the restore DVD or USB device is connected to the computer.
4. Restart the computer.
5. Using the arrow keys, select **Recovery**, and then press enter.
6. Follow the on-screen instructions.

NOTE: If you are unable to boot (start up) your computer, and you did not create a system recovery disc, you must purchase an *Ubuntu Operating System* DVD to reinstall the operating system. For additional information, refer to the *Worldwide Telephone Numbers* booklet.

Backing up your information

You should back up your computer files on a regular schedule to maintain a current backup. You can manually back up your information to an optional external drive, a network drive, discs, or the Ubuntu One website. Back up your system at the following times:

- At regularly scheduled times
- Before the computer is repaired or restored
- Before you add or modify hardware or software

To back up your home directory files to the Ubuntu One website using the Deja Dup Backup Tool:

NOTE: Before you back up your information, be sure you have designated a location to save the backup files.

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Select **Folders** from the panel on the left side of the window, and beneath **Folders to back up**, select the folders to back up.

3. Select **Storage** from the panel on the left side of the window, click the down-arrow next to **Backup Location**, and select **Ubuntu One** from the drop-down list.
4. Select **Overview** from the panel on the left side of the window, and then click **Back Up Now**.

NOTE: The first time you back up your files to Ubuntu One, you will need to create an account to sign into Ubuntu One. Enter your email address and password into the account sign-in boxes and follow the on-screen instructions to complete the sign-in process.

To restore backup files:

1. Click the **System menu** icon at the far right of the top panel, and then click **System Settings > Backup** icon.
2. Click **Restore**, select the location of the backup files and the folder name, and then click **Forward**.
3. Under **Restore from When?**, select the date of the files to be restored, and then click **Forward**.
4. Select the location and folder where the files are to be restored, and then click **Forward**.
5. Follow the instructions on the screen.
6. Click **Restore** to start restoring the files, or click **Cancel** to cancel the operation.

NOTE: You may also back up to cloud storage services provided by various companies. For a small fee, they will keep your backup for you. A cloud service is recommended, since it is an easy way to keep your backups off-site and safe.

11 Support

Contacting support

NOTE: To access the *Ubuntu Desktop Guide*, press the f1 key.

If the information provided in this user guide or in the *Ubuntu Desktop Guide* does not answer your questions, you can contact support. For U.S. support, go to http://www.hp.com/go/contactHP. For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.

Here you can:

- Chat online with an HP technician.

  NOTE: When support chat is not available in a particular language, it is available in English.

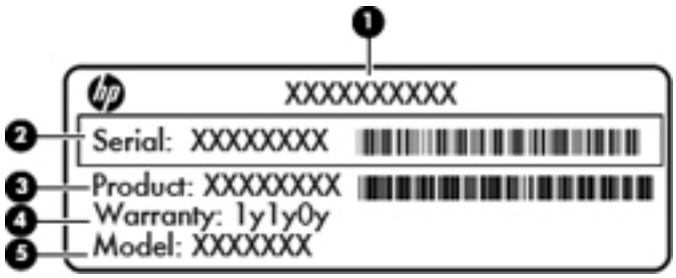
- E-mail HP support.
- Find support telephone numbers.
- Locate an HP service center.

Labels

The labels affixed to the computer provide information you may need when you troubleshoot system problems or travel internationally with the computer. The labels are in easily accessible locations.

NOTE: The location of the labels affixed to your computer may vary by model.

- Service label—Provides important information, including the following:



Component	
(1)	Product name
(2)	Serial number
(3)	Product part number
(4)	Warranty period
(5)	Model description (select models only)

Have this information available when you contact support. The service label is typically affixed to the bottom of the computer.

- Regulatory label—Provides regulatory information about the computer. The regulatory label is typically affixed inside the battery bay.
- Wireless certification label or labels—Provide information about optional wireless devices and the approval markings of some of the countries or regions in which the devices have been approved for use. If your computer model includes one or more wireless devices, one or more certification labels are included with your computer. You may need this information when traveling internationally. Wireless certification labels are typically affixed inside the battery bay.

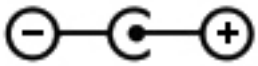
12 Specifications

Input power

The power information in this section may be helpful if you plan to travel internationally with the computer.

The computer operates on DC power, which can be supplied by an AC or a DC power source. The AC power source must be rated at 100–240 V, 50–60 Hz. Although the computer can be powered from a standalone DC power source, it should be powered only with an AC adapter or a DC power source supplied and approved by HP for use with this computer.

The computer can operate on DC power within the following specifications. Operating voltage and current varies by platform.

Input power	Rating
Operating voltage and current	18.5 V dc @ 3.5 A or 19.5 V dc @ 3.33 A – 65 W 19 V dc @ 4.74 A or 19.5 V dc @ 4.62 A – 90 W 18.5 V dc @ 6.5 A or 19.5 V dc @ 6.15 A – 120 W
DC plug of external HP power supply	

NOTE: This product is designed for IT power systems in Norway with phase-to-phase voltage not exceeding 240 V rms.

NOTE: The computer operating voltage and current can be found on the system regulatory label.

Operating environment

Factor	Metric	U.S.
Temperature		
Operating	**5°C to 35°C**	41°F to 95°F
Nonoperating	**-20°C to 60°C**	-4°F to 140°F
Relative humidity (noncondensing)		
Operating	**10% to 90%**	10% to 90%
Nonoperating	**5% to 95%**	5% to 95%
Maximum altitude (unpressurized)		
Operating	**-15 m to 3,048 m**	-50 ft to 10,000 ft
Nonoperating	**-15 m to 12,192 m**	-50 ft to 40,000 ft

13 Electrostatic Discharge

Electrostatic discharge is the release of static electricity when two objects come into contact—for example, the shock you receive when you walk across the carpet and touch a metal door knob.

A discharge of static electricity from fingers or other electrostatic conductors may damage electronic components. To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

- If removal or installation instructions direct you to unplug the computer, unplug it after being properly grounded and before removing a cover.
- Keep components in their electrostatic-safe containers until you are ready to install them.
- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
- Use nonmagnetic tools.
- Before handling components, discharge static electricity by touching an unpainted metal surface of the component.
- If you remove a component, place it in an electrostatic-safe container.

If you need more information about static electricity or assistance with component removal or installation, contact support.

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